GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

January 2004

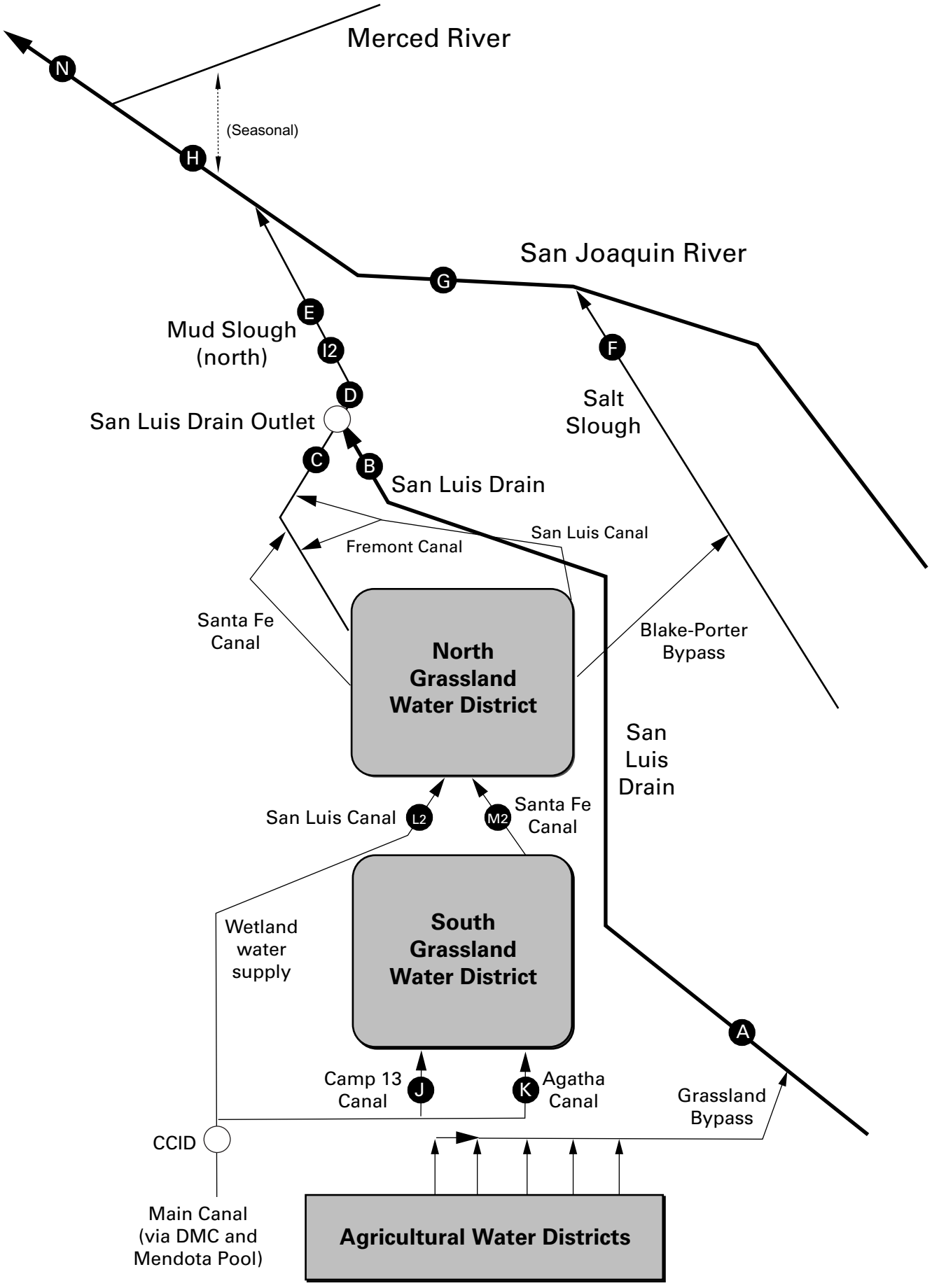
April 12, 2004

Preliminary Results

A cooperative effort of:

U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

compiled by San Francisco Estuary Institute


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
F
D
Salt
Slough
San Luis Drain Outlet
C
B
San Luis Drain
San Luis Canal
Fremont Canal
Santa Fe
Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
San Luis Canal
L2
M2
Santa Fe
Canal
Wetland
water
supply
South
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Water District
A
Camp 13
Canal
J
K
Agatha
Canal
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Bypass
CCID
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Jan-01-2004	17	5,080
Jan-02-2004	19	5,010
Jan-03-2004	19	4,960
Jan-04-2004	17	5,090
Jan-05-2004	17	4,990
Jan-06-2004	17	5,010
Jan-07-2004	18	5,070
Jan-08-2004	18	5,130
Jan-09-2004	17	5,050
Jan-10-2004	19	5,100
Jan-11-2004	20	5,100
Jan-12-2004	18	4,940
Jan-13-2004	18	4,870
Jan-14-2004	18	4,790
Jan-15-2004	19	4,850
Jan-16-2004	19	4,800
Jan-17-2004	19	4,740
Jan-18-2004	20	4,670
Jan-19-2004	20	4,500
Jan-20-2004	21	4,410
Jan-21-2004	20	4,460
Jan-22-2004	20	4,550
Jan-23-2004	23	4,680
Jan-24-2004	24	4,630
Jan-25-2004	24	4,660
Jan-26-2004	24	4,450
Jan-27-2004	16	5,030
Jan-28-2004	16	5,010
Jan-29-2004	19	4,540
Jan-30-2004	19	4,540
Jan-31-2004	28	4,600
Mean	19	4,820

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Jan-01-2004	18	9.7	6.2	4,060	63.3	6.1
Jan-02-2004	23	9.7	6.1	4,020	66.2	8.2
Jan-03-2004	25 e	9.3	6.1	3,960	62.6	8.4
Jan-04-2004	25 e	8.6	6.3	4,210	73.3	9.9
Jan-05-2004	23 e	8.5	6.3	4,130	58.0	7.2
Jan-06-2004	23 e	8.6	6.1	3,970	45.4	5.6
Jan-07-2004	22	9.1	6.3	4,270	59.8	7.1
Jan-08-2004	23	10.0	6.7	4,390	68.1	8.4
Jan-09-2004	23	10.5	6.7	4,360	75.0	9.3
Jan-10-2004	22	10.6	6.3	4,380	83.6	9.9
Jan-11-2004	24 e	10.7	6.3	4,350	77.2	10.0
Jan-12-2004	25	10.8	6.0	4,330	72.5	9.8
Jan-13-2004	23	10.7	6.2	4,420	74.2	9.2
Jan-14-2004	23	10.6	6.6	4,560	79.2	9.8
Jan-15-2004	23	10.6	6.8	4,550	82.2	10.2
Jan-16-2004	23	10.5	6.5	4,480	79.8	9.9
Jan-17-2004	24	10.4	7.5	4,750	79.3	10.3
Jan-18-2004	24	10.5	6.7	4,540	80.6	10.4
Jan-19-2004	24	10.5	6.7	4,430	75.6	9.8
Jan-20-2004	25 e	10.4	6.7	4,370	69.5	9.4
Jan-21-2004	26 e	10.3	6.4	4,410	68.6	9.6
Jan-22-2004	25 e	10.2	6.8	4,360	67.7	9.1
Jan-23-2004	26 e	10.0	6.6	4,320	68.5	9.6
Jan-24-2004	28	10.3	6.5	4,190	69.9	10.6
Jan-25-2004	30 e	10.8	6.3	4,190	71.6	11.6
Jan-26-2004	30 e	10.3	6.1	4,090	63.8	10.3
Jan-27-2004	29	10.3	6.3	4,110	57.7	9.0
Jan-28-2004	29	10.3	6.3	4,270	54.2	8.5
Jan-29-2004	23 e	10.9	6.5	4,430	74.3	9.2
Jan-30-2004	22 e	11.2	7.1	4,410	75.2	8.9
Jan-31-2004	25	10.8	7.0	4,510	78.9	10.6
Mean	24	10.2	6.5	4,320	70.2	9.2
Total Acre-feet	**1,500**					
Total (lbs)						**286**

Load Limitation for January 2004 (lbs)	**333**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, January 2004.
Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	SLDMWA	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Jan-01-2004	20	63.3	6.8
Jan-02-2004	23	66.2	8.2
Jan-03-2004	24	62.6	8.1
Jan-04-2004	24	73.3	9.5
Jan-05-2004	23	58.0	7.2
Jan-06-2004	22	45.4	5.4
Jan-07-2004	22	59.8	7.1
Jan-08-2004	23	68.1	8.4
Jan-09-2004	23	75.0	9.3
Jan-10-2004	22	83.6	9.9
Jan-11-2004	23	77.2	9.6
Jan-12-2004	24	72.5	9.4
Jan-13-2004	23	74.2	9.2
Jan-14-2004	23	79.2	9.8
Jan-15-2004	23	82.2	10.2
Jan-16-2004	23	79.8	9.9
Jan-17-2004	23	79.3	9.8
Jan-18-2004	23	80.6	10.0
Jan-19-2004	24	75.6	9.8
Jan-20-2004	24	69.5	9.0
Jan-21-2004	25	68.6	9.2
Jan-22-2004	24	67.7	8.8
Jan-23-2004	24	68.5	8.9
Jan-24-2004	27	69.9	10.2
Jan-25-2004	28	71.6	10.8
Jan-26-2004	29	63.8	10.0
Jan-27-2004	29	57.7	9.0
Jan-28-2004	28	54.2	8.2
Jan-29-2004	23	74.3	9.2
Jan-30-2004	21	75.2	8.5
Jan-31-2004	22	78.9	9.4
Mean	24	70.2	9.0
Total Acre-feet	**1,470**		
Total (lbs)			**279**

*Selenium (total) concentrations from Site B (San Luis Drain)
Note: USGS is verifying flow data for the SLD Terminus.

The US Geological Survey determines flow at Station B through continuous measurements of stage that is rated for a known cross-section. These flow data, listed in Table 2a, are verified with frequent current meter measurements.

Monitoring and Reporting Program No. 5-101-234 states:

"Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B)."

Accurate flow measurements are necessary to determine compliance with selenium load limits specified in Waste Discharge Requirement Order No. 5-101-234.

The accumulation of sediments, as documented in the 2001 Annual Report, have caused irregularities in flow measurements at Station B, resulting in "shifts" in the relationship between stage and discharge.

To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation.

This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that flow will be measured solely at the Outlet works for determination of GBP flow discharge.

Unofficial flow data for the Outlet works are presented in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

Figure 2c. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.

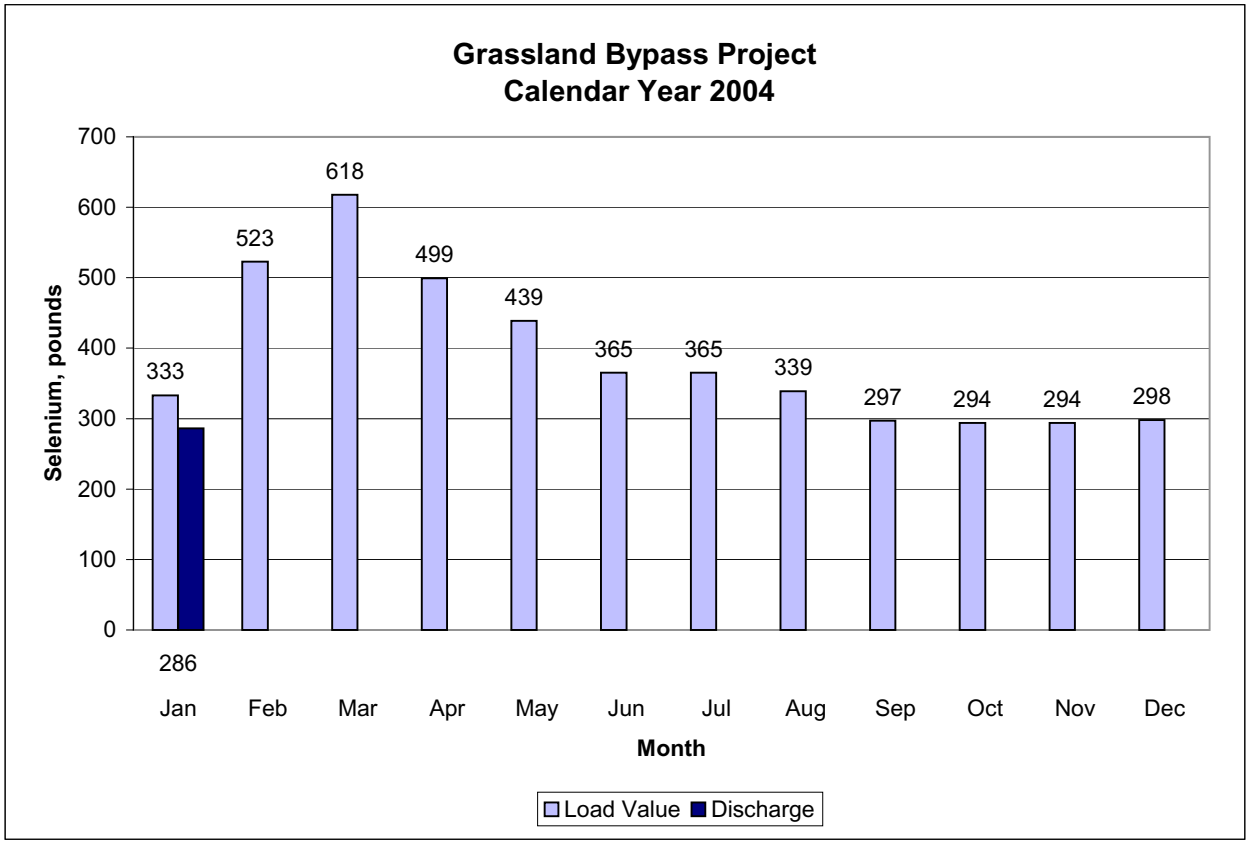

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jan-01-2004	244	9.4	1,640
Jan-02-2004	253	9.3	1,660
Jan-03-2004	241	8.6	1,710
Jan-04-2004	211	7.7	1,820
Jan-05-2004	196	7.7	1,840
Jan-06-2004	193	7.6	1,800
Jan-07-2004	187	8.4	1,840
Jan-08-2004	174	9.9	1,930
Jan-09-2004	164	10.6	1,980
Jan-10-2004	161	10.6	1,960
Jan-11-2004	164	10.6	1,990
Jan-12-2004	159	10.6	2,020
Jan-13-2004	152	10.3	2,070
Jan-14-2004	130	9.9	2,220
Jan-15-2004	129	9.8	2,200
Jan-16-2004	129	9.9	2,210
Jan-17-2004	130	9.8	2,260
Jan-18-2004	126	9.8	2,300
Jan-19-2004	123	10.1	2,310
Jan-20-2004	120	10.0	2,330
Jan-21-2004	124	9.6	2,310
Jan-22-2004	130	9.5	2,240
Jan-23-2004	125	9.4	2,270
Jan-24-2004	127	9.8	2,340
Jan-25-2004	131	10.4	2,290
Jan-26-2004	134	9.6	2,280
Jan-27-2004	134	10.0	2,270
Jan-28-2004	138	10.2	2,250
Jan-29-2004	132	11.3	2,270
Jan-30-2004	120	11.2	2,330
Jan-31-2004	111	10.6	2,410
Mean	155	9.7	2,110

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jan-01-2004	220	9.5	1,490
Jan-02-2004	231	9.6	1,460
Jan-03-2004	235	9.0	1,440
Jan-04-2004	242	8.1	1,450
Jan-05-2004	243	7.8	1,450
Jan-06-2004	245	7.6	1,470
Jan-07-2004	249	8.3	1,500
Jan-08-2004	254	9.3	1,510
Jan-09-2004	257	9.9	1,470
Jan-10-2004	247	10.1	1,420
Jan-11-2004	237	10.2	1,400
Jan-12-2004	230	10.5	1,380
Jan-13-2004	226	10.4	1,360
Jan-14-2004	220	10.1	1,380
Jan-15-2004	216	10.0	1,370
Jan-16-2004	216	10.1	1,330
Jan-17-2004	213	10.1	1,360
Jan-18-2004	200	10.2	1,420
Jan-19-2004	197	10.5	1,440
Jan-20-2004	191	10.4	1,450
Jan-21-2004	185	10.5	1,470
Jan-22-2004	183	10.2	1,450
Jan-23-2004	186 e	9.8	1,450
Jan-24-2004	187 e	10.0	1,500
Jan-25-2004	184	10.7	1,550
Jan-26-2004	180	10.1	1,560
Jan-27-2004	173	10.4	1,580
Jan-28-2004	179	10.7	1,580
Jan-29-2004	196	11.1	1,530
Jan-30-2004	188	11.1	1,560
Jan-31-2004	194	10.8	1,590
Mean	213	9.9	1,460

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB
UNITS	cfs	°C	µS/cm	µg/L
Jan-01-2004	979	10.2	1,200	1.4
Jan-02-2004	1,070	9.9	1,180	1.4
Jan-03-2004	1,060	9.3	1,210	1.6
Jan-04-2004	1,130	8.2	1,150	1.7
Jan-05-2004	1,160	7.9	1,120	1.7
Jan-06-2004	1,120	7.6	1,130	1.9
Jan-07-2004	1,070	8.2	1,170	1.5
Jan-08-2004	1,040	9.5	1,230	1.4
Jan-09-2004	1,020	10.3	1,280	1.9
Jan-10-2004	978	10.6	1,320	2.0
Jan-11-2004	936	10.4	1,360	2.3
Jan-12-2004	915	10.9	1,380	2.3
Jan-13-2004	877	10.6	1,410	2.4
Jan-14-2004	860	10.3	NA	NA
Jan-15-2004	845	10.2	1,460	2.2
Jan-16-2004	816	10.4	1,500	2.3
Jan-17-2004	804	10.3	1,490	2.6
Jan-18-2004	797	10.4	1,490	2.7
Jan-19-2004	785	10.6	1,530	2.6
Jan-20-2004	774	10.5	1,550	2.7
Jan-21-2004	780	9.9	1,520	2.8
Jan-22-2004	767	9.9	1,540	2.4
Jan-23-2004	756	9.7	NA	NA
Jan-24-2004	760	10.1	NA	NA
Jan-25-2004	769	10.6	NA	NA
Jan-26-2004	771	10.2	NA	NA
Jan-27-2004	788	10.2	NA	NA
Jan-28-2004	787	10.7	NA	NA
Jan-29-2004	770	11.5	NA	NA
Jan-30-2004	773	11.2	NA	NA
Jan-31-2004	770	10.7	NA	NA
Mean	888	10.0	1,340	2.1

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
Nov-05-2003	19	.	.	5,650	NA	.	.	.
Nov-12-2003	18	.	.	4,780	52	.	.	.
Nov-19-2003	15	.	.	4,640	35	.	.	.
Nov-25-2003	15	.	.	4,900	14	.	.	.
Dec-03-2003	16	.	.	4,680	53	.	.	.
Dec-10-2003	17	.	.	5,210	54	.	.	.
Dec-17-2003	14	.	.	5,260	21	.	.	.
Dec-22-2003	17	.	.	4,710	120	.	.	.
Dec-29-2003	12	.	.	4,360	NA	.	.	.
Jan-07-2004	18	.	.	5,020	45	.	.	.
Jan-14-2004	18	.	.	4,760	120	.	.	.
Jan-21-2004	20	.	.	4,480	87	.	.	.
Jan-28-2004	16	.	.	5,170	34	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
Nov-04-2003	16	.	.	5,170	.	78.5	.	8.3
Nov-11-2003	17	.	.	4,840	.	77.4	.	8.2
Nov-18-2003	15	.	.	4,670	.	68.7	.	8.5
Nov-24-2003	14	.	.	5,030	.	90.9	.	8.3
Dec-01-2003	18	.	.	5,140	.	99.0	.	8.4
Dec-09-2003	15	.	.	5,080	.	95.4	.	8.3
Dec-16-2003	16	.	.	5,260	.	104	.	7.5
Dec-21-2003	21	.	.	5,070	.	100	.	7.7
Dec-28-2003	13	.	.	4,980	.	93.6	.	NA
Jan-06-2004	17	.	.	5,110	.	91.5	.	NA
Jan-13-2004	18	.	.	5,150	.	100	.	7.6
Jan-20-2004	21	.	.	4,730	.	82.5	.	7.5
Jan-27-2004	16	.	.	4,740	.	80.2	.	6.9

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
Nov-06-2003	26	14.1	8.4	4,460	32	57.8	7.0
Nov-13-2003	25	13.7	8.3	4,380	31	68.1	6.1
Nov-20-2003	20	13.8	8.2	3,900	30	41.2	5.9
Nov-26-2003	21	8.9	8.3	3,970	28	46.5	6.2
Dec-04-2003	20	11.9	7.7	4,350	38	65.9	6.6
Dec-11-2003	22	11.1	8.0	4,030	NA	58.2	6.4
Dec-18-2003	20	9.5	8.1	4,430	26	69.9	6.3
Dec-23-2003	23	10.9	7.9	4,460	24	78.8	6.2
Dec-30-2003	21	8.5	7.8	4,020	21	55.1	NA
Jan-08-2004	23	9.0	7.9	4,450	27	70.6	NA
Jan-15-2004	23	10.1	8.0	4,560	24	79.9	6.6
Jan-22-2004	25	9.5	8.0	4,410	24	68.2	6.7
Jan-29-2004	23	10.2	7.9	4,550	NA	93.1	6.7

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated ++	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
Nov-06-2003	183	13.8	7.7	1,130	.	<0.4	0.8
Nov-13-2003	147	13.1	7.7	1,190	.	<0.4	0.9
Nov-20-2003	152	13.3	7.7	1,230	.	<0.4	0.9
Nov-26-2003	109	7.9	7.9	1,410	.	0.4	1.0
Dec-04-2003	98	12.0	7.8	1,500	.	<0.4	1.0
Dec-11-2003	133	10.7	7.9	1,500	.	<0.4	1.4
Dec-18-2003	127	8.6	8.0	1,560	.	<0.4	1.2
Dec-23-2003	154	10.8	7.7	1,640	.	<0.4	1.2
Dec-30-2003	198	8.1	7.9	1,530	.	<0.4	NA
Jan-08-2004	151	8.9	7.8	1,740	.	<0.4	NA
Jan-15-2004	106	9.6	7.8	1,980	.	<0.4	1.6
Jan-22-2004	105	8.6	7.8	2,010	.	<0.4	1.7
Jan-29-2004	109	10.5	7.9	2,140	.	<0.4	1.7

++ Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Nov-06-2003	209	13.8	7.8	1,550	8.3	1.5
Nov-13-2003	172	13.2	7.7	1,710	10.4	1.7
Nov-20-2003	172	13.3	7.8	1,590	5.4	1.4
Nov-26-2003	130	8.0	8.0	1,850	7.3	1.7
Dec-04-2003	118	12.0	7.7	2,040	10.5	2.0
Dec-11-2003	155	10.8	7.8	1,900	8.0	2.0
Dec-18-2003	147	8.6	7.9	2,020	10.0	1.9
Dec-23-2003	177	10.9	7.6	2,010	11.4	1.8
Dec-30-2003	219	8.1	7.9	1,820	5.8	NA
Jan-08-2004	174	8.9	7.7	2,140	8.4	NA
Jan-15-2004	129	9.6	7.9	2,470	12.8	2.5
Jan-22-2004	130	8.7	7.8	2,490	11.5	2.6
Jan-29-2004	132	10.5	7.9	2,460	8.4	2.4

Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
Nov-06-2003	.	7.6	1,580	11	6.6	1.6
Nov-10-2003	.	7.6	1,630	17	5.5	1.6
Nov-20-2003	.	7.5	1,640	14	4.5	1.6
Nov-24-2003	.	7.8	2,050	NA	7.2	2.0
Dec-01-2003	.	7.8	2,310	11	12.8	2.4
Dec-08-2003	.	7.7	1,420	11	7.9	1.9
Dec-15-2003	.	7.7	1,410	12	8.9	2.0
Dec-22-2003	.	7.5	1,910	6	8.4	1.9
Dec-29-2003	.	NA	NA	NA	NA	NA
Jan-06-2004	.	NA	NA	NA	NA	NA
Jan-13-2004	.	7.6	2,310	6	9.8	2.4
Jan-22-2004	.	7.8	2,550	12	11.6	2.8
Jan-30-2004	.	7.8	2,750	8	10.7	2.8

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Nov-06-2003	166	12.8	7.7	1,200	<0.4	0.6
Nov-13-2003	157	12.8	7.7	1,390	<0.4	0.8
Nov-20-2003	167	12.6	7.6	1,380	0.5	0.8
Nov-26-2003	144	8.2	7.7	1,540	1.2	0.8
Dec-04-2003	113	12.2	7.9	1,670	<0.4	NA
Dec-11-2003	90	11.2	7.5	2,020	<0.4	NA
Dec-18-2003	90	8.6	7.6	1,920	<0.4	1.2
Dec-23-2003	108	11.4	7.4	1,740	0.6	1.0
Dec-30-2003	193	8.3	7.7	1,600	0.8	NA
Jan-08-2004	254	8.5	7.7	1,560	0.6	NA
Jan-15-2004	216	9.8	7.7	1,690	0.7	1.1
Jan-22-2004	183	9.4	7.7	1,680	0.7	1.0
Jan-29-2004	196	10.3	7.6	1,630	<0.4	NA

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Nov-05-2003	10	.	.	567	0.4	0.1
Nov-12-2003	10	.	.	568	0.6	0.2
Nov-19-2003	10	.	.	596	0.9	0.3
Nov-25-2003	10	.	.	710	0.6	0.4
Dec-03-2003	10	.	.	842	0.7	NA
Dec-10-2003	10	.	.	740	0.7	0.5
Dec-17-2003	10	.	.	649	<0.4	NA
Dec-22-2003	10	.	.	609	<0.4	NA
Dec-29-2003	10	.	.	555	<0.4	NA
Jan-07-2004	10	.	.	752	0.8	NA
Jan-14-2004	10	.	.	600	0.7	0.3
Jan-21-2004	10	.	.	645	0.9	0.3
Jan-28-2004	10	.	.	868	1.6	0.5

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Nov-05-2003	50	.	.	572	0.4	0.1
Nov-12-2003	50	.	.	529	0.5	0.2
Nov-19-2003	50	.	.	565	0.9	0.3
Nov-25-2003	50	.	.	550	0.5	0.2
Dec-03-2003	50	.	.	598	<0.4	NA
Dec-10-2003	50	.	.	630	0.4	0.2
Dec-17-2003	50	.	.	779	0.7	0.3
Dec-22-2003	50	.	.	737	0.6	NA
Dec-29-2003	50	.	.	674	<0.4	NA
Jan-07-2004	50	.	.	670	0.7	NA
Jan-14-2004	50	.	.	565	0.8	0.3
Jan-21-2004	50	.	.	635	0.8	0.3
Jan-28-2004	50	.	.	669	1.4	0.3

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Nov-05-2003	45	.	.	580	0.5	0.2
Nov-12-2003	15	.	.	608	0.7	0.3
Nov-19-2003	0	.	.	618	0.8	0.3
Nov-25-2003	0	.	.	900	0.9	0.7
Dec-03-2003	0	.	.	1,740	1.6	2.2
Dec-10-2003	25	.	.	725	0.8	0.4
Dec-17-2003	0	.	.	824	0.8	0.4
Dec-22-2003	0	.	.	1,300	1.4	1.4
Dec-29-2003	0	.	.	900	0.6	NA
Jan-07-2004	0	.	.	895	0.9	NA
Jan-14-2004	0	.	.	1,290	1.7	1.3
Jan-21-2004	0	.	.	1,430	1.9	1.5
Jan-28-2004	0	.	.	855	1.1	0.6

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
Nov-05-2003	130	.	.	1,030	0.5	0.9
Nov-12-2003	133	.	.	1,070	0.4	1.0
Nov-19-2003	137	.	.	1,050	0.7	1.0
Nov-25-2003	128	.	.	1,070	0.6	1.0
Dec-03-2003	134	.	.	1,150	0.5	1.2
Dec-10-2003	107	.	.	1,250	0.5	1.3
Dec-17-2003	61	.	.	1,280	0.5	1.2
Dec-22-2003	55	.	.	1,300	0.5	1.3
Dec-29-2003	60	.	.	1,200	0.6	NA
Jan-07-2004	119	.	.	1,270	0.5	NA
Jan-14-2004	125	.	.	1,310	0.9	1.4
Jan-21-2004	160	.	.	1,210	0.9	1.2
Jan-28-2004	145	.	.	1,460	1.0	1.4

Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
Nov-05-2003	.	.	.	567	0.5	0.1
Nov-12-2003	.	.	.	518	0.4	0.2
Nov-19-2003	.	.	.	560	0.9	0.2
Nov-25-2003	.	.	.	700	1.2	0.3
Dec-03-2003	.	.	.	662	1.0	0.3
Dec-10-2003	.	.	.	655	1.0	0.3
Dec-17-2003	.	.	.	655	0.9	0.3
Dec-22-2003	.	.	.	660	0.8	0.3
Dec-29-2003	.	.	.	660	0.6	NA
Jan-07-2004	.	.	.	656	0.8	NA
Jan-14-2004	.	.	.	655	1.1	0.3
Jan-21-2004	.	.	.	660	1.0	0.3
Jan-28-2004	.	.	.	754	1.5	0.4

Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Nov-06-2003	167	13.2	7.9	1,300	<0.4	0.7
Nov-13-2003	166	12.8	7.7	1,580	<0.4	0.8
Nov-20-2003	173	13.4	7.3	1,480	0.4	0.8
Nov-26-2003	160	7.8	7.8	1,560	0.5	0.8
Dec-04-2003	132	12.1	8.0	2,000	<0.4	0.9
Dec-11-2003	109	11.3	7.5	2,210	<0.4	1.0
Dec-18-2003	136	8.9	8.2	1,780	<0.4	0.8
Dec-23-2003	145	10.9	7.6	1,840	0.5	0.7
Dec-30-2003	242	8.5	7.6	1,520	0.8	NA
Jan-08-2004	341	8.4	7.4	1,370	0.4	NA
Jan-15-2004	243	9.8	7.8	1,730	0.5	1.0
Jan-22-2004	205	9.3	7.9	1,890	0.7	1.0
Jan-29-2004	207	10.8	7.8	1,880	0.4	1.0

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
Nov-04-2003	.	.	.	1,450	3.1	0.9
Nov-14-2003	.	.	.	1,730	4.1	1.2
Nov-18-2003	.	.	.	1,560	2.5	1.2
Nov-26-2003	.	.	.	1,710	2.8	1.2
Dec-03-2003	.	.	.	NA	NA	NA
Dec-11-2003	.	.	.	2,080	4.0	1.4
Dec-16-2003	.	.	.	2,090	4.6	1.4
Dec-23-2003	.	.	.	1,850	4.7	1.3
Jan-06-2004	.	.	.	1,520	2.3	1.2
Jan-13-2004	.	.	.	2,000	3.5	1.5
Jan-20-2004	.	.	.	2,220	4.3	1.6

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
Nov-06-2003	791	13.6	7.8	960	2.3	0.6
Nov-13-2003	735	13.2	7.8	1,090	2.1	0.7
Nov-20-2003	725	13.3	7.9	1,090	1.5	0.7
Nov-26-2003	675	8.5	7.9	1,180	1.6	0.7
Dec-04-2003	607	12.3	7.9	1,280	2.4	0.8
Dec-11-2003	634	11.5	7.8	1,300	2.6	0.8
Dec-18-2003	673	9.2	8.0	1,300	2.5	0.8
Dec-23-2003	756	11.2	7.8	1,300	2.6	0.8
Dec-30-2003	892	8.6	7.8	1,240	1.8	NA
Jan-08-2004	1,040	9.0	7.8	1,240	1.3	NA
Jan-15-2004	845	10.0	7.8	1,440	2.4	1.1
Jan-22-2004	767	9.4	7.9	1,540	2.3	1.0
Jan-29-2004	770	11.3	7.9	1,550	2.4	1.0

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from February 2003 to January 2004. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Feb-2003	98	78	73	88	98	100
Mar-2003	93	85*	100	95	100	100
Apr-2003	90	100	100	75*	88	100
May-2003	98	100	100	95	100	100
Jun-2003	95	93	98	93	65†	100
Jul-2003	95	100	93	98	93	100
Aug-2003	95	98	95	93	95	98
Sep-2003	100	100	95	93	98	100
Oct-2003	100	100	93	100	100	100
Nov-2003	100	93	40*	100	75	100
Dec-2003	95	40*	53*	83	88	100
Jan-2004	95	58*	75	93	98	100

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from February 2003 to January 2004. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
Feb-2003	0.27	0.24	0.22	0.25	0.26	0.30
Mar-2003	0.33	0.36	0.34	0.28	0.30	0.35
Apr-2003	0.34	0.50	0.47	0.31	0.30	0.24
May-2003	0.37*	0.46*	0.40*	0.46	0.50	0.30
Jun-2003	0.47	0.43	0.40	0.40	0.47	0.37
Jul-2003	0.58*	0.61*	0.73	0.65	0.71	0.65
Aug-2003	0.39	0.38	0.33	0.33	0.33	0.33
Sep-2003	0.46	0.37	0.45	0.38	0.31	0.38
Oct-2003	0.32	0.38	0.32	0.37	0.31	0.29
Nov-2003	0.45	0.43	0.16*	0.45	0.34	0.45
Dec-2003	0.50	0.29*	0.34	0.39	0.43	0.48
Jan-2004	0.60	0.37	0.49	0.58	0.55	0.58

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from February 2003 to January 2004. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Feb-2003	100	100	100	100	100	100
Mar-2003	100	100	90	90	100	90
Apr-2003	90	100	100	100	80	100
May-2003	100	100	100	80	100	100
Jun-2003	90	100	90	100	80	90
Jul-2003	100	90	100	90	80	100
Aug-2003	90	100	90	90	90	100
Sep-2003	60*	100	100	90	100	90
Oct-2003	60*	100	100	100	100	100
Nov-2003	90	100	89	100	100	90
Dec-2003	90	90	100	100	90	100
Jan-2004	95	58*	75	93	98	100

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from February 2003 to January 2004. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
Feb-2003	36.1	38.0	32.9	37.0	35.0	28.7
Mar-2003	50.9	43.2	46.6	44.4	44.0	41.5
Apr-2003	38.5	42.0	43.3	34.6	31.1	35.1
May-2003	31.7	29.2	34.6	19.0*	30.4	23.7
Jun-2003	28.5	23.0	24.3	29.7	19.5	27.4
Jul-2003	39.9	28.8	46.9	28.2	25.0	26.0
Aug-2003	30.1	33.5	29.0	24.4	33.5	26.7
Sep-2003	25.1	30.1	36.1	31.2	33.0	25.6
Oct-2003	23.3	48.1	52.8	41.5	33.8	23.0
Nov-2003	54.8	40.7	44.3	54.7	45.3	38.1
Dec-2003	59.0	58.7	64.9	73.6	64.2	68.7
Jan-2004	46.8	45.0	40.7	44.5	54.1	41.5

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from February 2003 to January 2004. Each value is the mean of 4 replicates.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL
Feb-2003	0.6*	2.0*‡	1.0*‡	1.5*	3.0††††	1.2††††
Mar-2003	12.4*	18.4	14.6	20.3	17.4	22.2
Apr-2003	11.1*	15.4	13.3	8.9*	15.7	27.6
May-2003	8.4*	12.9	10.4	10.9	12.1	13.2
Jun-2003	16.2*	15.8*	13.2*	22.8*	31.6	35.2
Jul-2003	15.9*	22.7	12.1*	8.7*	19.5	16.6
Aug-2003	11.9*	13.6	11.7*	13.9	14.5	10.9
Sep-2003	11.8*	15.5	14.5*	13.9*	15.9	12.2
Oct-2003	10.0	12.6	12.2	8.6*	9.9††††	8.7††††
Nov-2003	12.3	22.5	21.2	18.9	14.8	15.3
Dec-2003	0.7*	26.6	34.4	21.1*	25.0	18.5
Jan-2004	9.7*	21.1	5.9*	8.8	18.4	20.9

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, November 2003 to January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
Nov-10-2003	51	<0.4	5.8	<0.4	<0.4
Nov-12-2003	85	<0.4	8.8	<0.4	<0.4
Nov-14-2003	56	<0.4	8.8	<0.4	<0.4
Dec-08-2003	73	<0.4	10	<0.4	<0.4
Dec-10-2003	63	<0.4	9.4	<0.4	<0.4
Dec-12-2003	60	<0.4	7.9	<0.4	1.0
Jan-05-2004	56	<0.4	8.0	0.5	<0.4
Jan-07-2004	62	<0.4	6.0	0.4	<0.4
Jan-09-2004	78	<0.4	10	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected from November 2003 to January 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
Nov-10-2003	43	22	27	77	13
Nov-12-2003	46	17	26	64	12
Nov-14-2003	53	24	24	109	3
Dec-08-2003	40	17	12	79	3
Dec-10-2003	30	17	18	67	3
Dec-12-2003	33	18	30	37	8
Jan-05-2004	25	7	13	44	16
Jan-07-2004	34	7	10	45	11
Jan-09-2004	39	24	29	70	11

Table 27. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal ($p<0.05$)
**	Sample re-analyzed and result confirmed.
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10^6cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
v	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated